Chinese Medical Journal, 108(10): 780, 1995.

BRIEF REPORTS

PRELIMINARY REPORT ON THE RESULTS OF NUTRITION PREVENTION TRIALS OF CANCER AND OTHER COMMON DISEASES AMONG RESIDENTS IN LINXIAN, CHINA

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To examine whether vitamin / mineral supplementation may lower mortality and incidence for human cancer and mortality from other diseases as well as to provide the scientific basis and feasible approach for human cancer prevention and control, from 1982 to 1991 scientists from China and USA conducted two randomized, double-blind, placebo-controlled nutrition intervention trials in Linxian, China, where the mortality rates of esophageal and gastric cardia cancer are among the highest in the world and there is suspicion that the population's chronic deficiencies of multiple nutrients are etiologically involved. In the first trial, the Dysplasia trial, 3318 individuals with a cytological diagnosis of esophageal dysplasia received daily 26 vitamin / mineral supplements or placebo for 6 years. The second trial, the General Population Trial, involved 29584 individuals and used a one-half replicate of a 2^4 fractional factorial design that randomized to 8 groups for testing the effects of daily supplementation of 4 different vitamin / mineral combinations and placebo for a period of 5.25 years. Compliance assessed by monthly pill counts and quarterly monitoring of biochemical assays indicated that the participant compliance was excellent. As endpoints of the trials, incident cancers and deaths were identified through all medical facilities in local areas, supplemented by special endoscopy and cytology examinations, and confirmed by 3-level review groups. A total of 323 deaths occurred during 6 year period among participants in the Dysplasia Trial, and 2127 deaths from the General Population Trial during 5.25 years. Besides, an eye examination, which included detailed lens evaluations, was included in the extensive re-examination protocol to ascertain whether use of the supplements had affected the risk of developing age-related cataracts among participants in the two trials. Results from Dysplasia Trial indicated that after 6 years of daily supplementation with multiple vitamins and minerals, total mortality among those in the active treatment group was slightly (9%) lower than in the placebo group; and deaths of esophageal cancer also declined by 17%, as well as a sizable reduction in cerebrovascular disease mortality (near 40%) was seen, though none was statistically significnat. However, intervention had decreased prevalence of eye nuclear cataract (43%) ($P<0.01$). The findings from the General Population Trial provided support for the hypothesis that intake of specific micro nutrients may inhibit cancer development. Significant reduction of total mortality (9%), cancer mortality (13%), gastric cancer mortality (20%), and mortality of the other cancers (19%) occurred among those receiving betacarotene / vitamin E / selenium supplementation ($P<0.05$). Patterns of cancer incidence, based on 1307 cases, generally resembled those for cancer mortality. Furthermore, esophageal cancer incidence was also significantly ($P<0.039$) lower among those receiving riboflavin / niacin (RR = 0.85, 95% CI = 0.73-0.99) and the supplementations of these nutrients also declined the prevalence of age-related eye nuclear cataract (41%, $P<0.001$). To the best of our knowledge, this is the first randomized population trial in the world confirming the supplementations of vitamin / mineral being able not only to reduce human cancer mortality and incidence, but also to decrease prevalence risk of some common diseases.

(Received June 1, 1994)

本文编辑: 孔华宇

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